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Life Grows Longer

If you are an American whose main interest in life is to live to the ripe old age of three score and fifteen, your chances are averagely best if you are a white woman living in Nebraska.

Whoever you are and wherever you live, chances are that you will live longer than your parents, and considerably longer than your grandparents. More people are now living much longer.

Your children will fare even better. The American baby will live, on the average, 21.5 years longer than his grandparents who were born in 1900. Then the average life expectancy at birth was only 47.3 years. In 1953, it was 68.8 years.

Today life expectancy in the United States ranks among the highest in the world, and is surpassed only in a few small countries, such as the Netherlands, New Zealand, and the Scandinavian nations. The Netherlands leads the world with a life expectancy of 72 years.

Girl babies born now in the United States will have a longer average life than boys. In 1953, girls could look forward to 72.1 years; boys to 66.1 years. In 1900, girls could expect only 48.3 years; and boys 46.3 years.

The advantage favoring women has grown from two years in 1900 to six years in 1953, but women had only a one-year edge in 1920.

The story is different for people over 50. Just a little more than three years has been added to their life expectancy in the half century.

The increase in longevity should not be confused with increase in the life span which may be defined as the limit beyond which human life does not extend, even under the most favorable circumstances. That has not varied greatly in historical times.

What has caused this dramatic gain in longevity for the United States citizen? Since 1900, the crude death rate has been cut almost in half. It declined from 17.2 to 9.2* in 1954.

This drastic reduction in the death rate reflects the tremendous advances made by medicine and public health since the turn of the century. Then smallpox, diphtheria, typhoid fever, yellow fever and malaria were common in the United States. The present generation, brought up in the era of wonder drugs, finds it hard to believe that

*Death rates are in terms of 1,000 of the population per year. 1954 and 1953 mortality data are based on returns of a 10 percent sample reported by the National Office of Vital Statistics.

the influenza epidemic of 1918 took almost a half million lives in this country; or that a frightful epidemic of yellow fever paralyzed the city of New Orleans in 1878; and that another less severe epidemic gripped that city in 1905.

MORTALITY AND LONGEVITY DIFFERENTIALS EXIST

Tremendous though the longevity gains are on the average, they have not been shared alike by all groups in the population. Mortality differences appear among the different ages, sexes, races and socio-economic groups.

It is to be expected that older people have higher death rates than young people, and that the total gain has been progressively less as age increases. Control of communicable diseases has benefited infants and children most by delaying death for them.

Women have benefited more than men from all of the the many public health and medical advances and from the improvements in living levels. Their death rate has declined more than 50 percent: from 16.5 in 1900 to 8.1 in 1953 and to 7.8 in 1954.

But men have not fared so well. Their death rate has declined only 41 percent: from 17.9 in 1900 to 11.1 in 1953 and to 10.6 in 1954. If American men were to have a death rate comparable to that of women, years would be added to their life expectancy.

The illness of President Eisenhower has focused international attention on the fact that many American men are stricken at the height of their careers, and that much research is needed to determine why this is so. Men should not be overly discouraged because excess male mortality is not necessarily inevitable. It may be overcome when research finds its causes.

Racial difference in death rates and longevity suggests still another area where concerted effort would reduce the death rate of the nation. Even though the non-white death rate has shown a greater decline than the white rate since 1900, non-white mortality still is higher. The death rate of non-whites dropped from 25.0 to 10.6 in 1953 and to 10.0 in 1954, while that for whites dropped from 17.0 to 9.5 in 1953 and to 9.1 in 1954.

As a result, in 1953 a non-white baby girl could expect to live, on the average, 64.4 years, compared to the 72.9 years for a white baby girl. A non-white baby boy could look forward to 59.7 years, compared with 66.8 years for a white male child.

Life expectancy still is shorter for non-whites, but the net gain in longevity since the turn of the century has favored them appreciably. Non-white females have gained 30.9 years and non-white males 27.2 years. White females have gained 24.2 years and white males only 20.2 years.

Mortality differentials among socio-economic groups are not as clearly defined, mainly because research in this area is quite limited. Studies made in rural Ohio, Cincinnati, and Chicago have shown that, generally speaking, death rates are higher for the poorest

people until age 55 or so, largely because more of them die from communicable diseases. After 55 the differential tapers off.

RADICAL CHANGES IN CAUSE OF DEATH SINCE 1900

A radical shift in cause of death since 1900 clearly reflects that the population of the United States has aged considerably since the turn of the century.

Then the big killers were infectious diseases: influenza and pneumonia, tuberculosis, gastro-intestinal diseases, diphtheria, typhoid fever, etc. Today the degenerative diseases, those of the circulatory system and cancer which are the chronic diseases among older people, account for more than half of all deaths.

So now chances are that you will eventually die of heart disease, America's greatest killer, or cancer since you have already survived the hazards of infancy. But your children face a different danger. Accidents rank first among causes of death for pre-school and school children; fourth among causes of death for the entire population.

Nearly twice as many men than women die of heart disease. Cancer hits the sexes about equally with a few striking exceptions: almost twice as many women as men die of cancer of the genital organs; and about six times as many men die of lung cancer. Twice as many men as women die of tuberculosis; more than twice as many men die as a result of accidents; and almost four times as many from suicide and homicide. But more women than men die of diabetes.

IMPLICATIONS FOR THE FUTURE

In the future, major reductions in the country's death rates must come through control of the chronic diseases of middle years and accidents at all ages. Mortality for disease among young people is already so low that further decreases will not have much effect upon the total rate or upon the average longevity of the population. Slight reductions in the total rate will come when the sex, racial and socio-economic differentials are reduced or eliminated.

With the proportion of people over 65 in the population increasing—in 1900 it was 4.1 percent; today it is 8.5 percent—the nation is faced with a serious problem. Adequate care for the aged should be provided. Radical reorientation of attitudes toward the aged in our society must come quickly if the longer life span is to be accompanied by the maximum of health and happiness.

DEATH RATE REDUCTIONS SINCE 1900 INCREASE LONGEVITY

Looking more closely at the data from which the foregoing facts are gleaned, other interesting information about life and death for Americans comes to light.

Since 1900, when the Bureau of the Census began collecting mortality data annually from a registration area consisting of ten states and the District of Columbia, there has been a downward trend in the death rate in the United States and a corresponding increase in life expectancy at birth. In 1900 the reg-

istration states represented only 26.3 percent of the population of the continental United States. As the collection of data improved, the registration area gradually extended until in 1933 it included all 48 states and the District of Columbia.[1]

For the period 1900-1954, the crude death rate in the United States declined consistently. The rate was 17.2 deaths per one thousand population in the registration states in 1900 and by 1954 it had declined to 9.2.[2] This latter rate includes the entire population of the United States, since all of the states were registration states. While the over all trend in the crude death rate has been downward, there have been upward changes in particular years. In 1918, the influenza epidemic resulted in a crude death rate of 18.1, slightly higher than the 1900 rate.[3] There has been a 4.2 percent decline since 1950.[4]

Although the decline in the death rate has been fairly continuous, the rate of decline has not been uniform. During the period 1900-1917, the rate declined almost three times faster than in the period 1921-1937. The downward trend again accelerated after 1937. From 1938 to 1950, the decline was almost twice as rapid as during the preceding period. The rate for 1954 indicates a continued decline.[5]

In comparing death rates over a period of years, the crude rates are affected by changes in the age composition of the population. Death rates that have been adjusted for age still show the same trend as the crude death rates for the United States. Age-adjusted rates based on the age distribution of the population of the United States as enumerated in 1940 show a death rate of 17.8 for 1900 and a rate of 7.7 for 1954.[6]

Life tables have been calculated for the United States since 1900, and these have reflected the decline in the death rate by a rise in the expectation of life at birth, defined as the average duration of life of a theoretical generation of 100,000 persons subject throughout life to the mortality rates of the period. The increase in longevity should not be taken as an increase in the life span, which may be defined as the limit beyond which human life does not extend even under the most favorable circumstances. There is little reason to believe that the life span has varied greatly within historical times.[7] There was thus a gain of 21.5 years in life expectation at birth between 1900 and 1953.[8] This reflects our constantly improved ability to preserve lives at the younger ages thus insuring more people a longer life on the average.

In general terms, the decline in mortality since 1900 has been the result of a higher level of living. Technological advance and high productivity have made research in sanitation and medicine possible. We have gained an increased measure of control over the communicable diseases which were widespread at the turn of the century.[9]

DIFFERENTIALS INDICATE AREAS FOR IMPROVEMENT

The longevity gains in the United States during the twentieth century have not been shared equally by all groups in the society. The trend discussed so far has been in terms of the whole population. But different age, sex, race, and socio-economic groups have a mortality experience different from the averages for the total population.

That persons in the older age groups have higher death rates than younger people is quite evident. This is not true for deaths of infants under one year of age whose death rate in 1954 was higher than that of any other age group under 65 years. Since 1900, death rates have decreased for all age groups, but the huge reductions in mortality from the contagious diseases have primarily reduced mortality in the younger ages, where deaths from contagious diseases were once large. For example, since 1900, the death rate for children 1-14 years of age has decreased 92 percent; while the rate for persons 75-84 has declined only 30 percent; and that for persons 85 and over, 33 percent.[11]

It can be seen clearly that the percent decrease in death rates since 1900 has been much smaller in the age groups over 55. The rates for younger groups are already so low, except for children under one year, that further appreciable reductions are unlikely. Some writers think that gains in the treatment of chronic diseases are beginning to bring significant reductions in the deaths of older persons.[12] It should be noted that known errors in enumeration and reported age at death for the older ages makes generalization for these groups difficult.[13]

TABLE I: DEATH RATES BY AGE: DEATH REGISTRATION STATES, 1900 AND 1954, WITH PERCENT DECREASES[10]

AGE	1900	1954	Percent Decrease 1900-54
All ages	17.2	9.2	46.5
Under 1 year	162.4	30.3	81.3
1-14 years	8.7	0.7	92.0
15-24 years	5.9	1.1	81.4
25-34 years	8.2	1.5	81.7
35-44 years	10.2	3.1	69.6
45-54 years	15.2	7.7	48.7
55-64 years	27.2	17.5	35.7
65-74 years	56.4	39.2	30.5
75-84 years	123.3	86.6	29.8
85 yrs. and over	260.9	175.1	32.9

WOMEN FAVORED MORE THAN MEN SINCE 1900

Throughout the period 1900-1953, females have enjoyed a longer life expectancy at birth than males. This longer average length of life has grown from an excess of two years over males in 1900 to an excess of six years in 1953. The trend for females to increase their life expectancy in comparison to males has not been uniform.

The mortality differential in favor of women appears in a comparison of age-adjusted death rates by sex for the period 1900-1954. The female rate declined from 17.0 to 6.5 in 1953 and 6.2 in 1954. The male rate declined from 18.6 to 9.9 and 9.4 during the same period.[14]

Thus the female age-adjusted death rate declined 63.5 percent from 1900 to 1954 while the male rate declined only 49.5 percent.

Some countries have a high excess male mortality while other countries do not.[15] The male death rate in the United States might well be reduced, bringing a decline in the sex differential in mortality. This is one of the many areas where further reduction in differentials would be reflected in a lower death rate for the nation. If the sex differential declined, in time men could expect longevity equal or nearly equal to that of women.

NON-WHITES GAIN MORE BUT DIFFERENTIAL REMAINS

Non-white mortality has shown a greater decline than that of whites since 1900, but it is still significantly higher.

The age-adjusted death rate for non-whites declined from 27.8 in 1900 to 10.9 in 1954, while that for whites declined from 17.6 to 7.4. The rate declined from 27.1 to 9.4 for non-white females; from 16.8 to 5.8 for white females; from 28.7 to 12.3 for non-white males and from 18.4 to 9.1 for white males.[16]

The differential is seen also in the life expectancy at birth of the two groups. In 1900, the average length of life for white males was 46.6 compared with 32.5 for non-white. It was 48.7 for white females compared with 33.5 for non-white. In 1953, the average length of life for white males was 66.8 years compared to 59.7 years for non-white males. The figures for white and non-white females were 72.9 and 64.4 years, respectively.[17]

Between 1900 and 1953, non-white life expectancies represent a gain of 30.9 years for females and 27.2 years for males. When compared with the gain for whites—20.2 years for white males and 24.2 years for females—the non-whites show an appreciably larger increase in life expectancy at birth.

The decrease of the racial differential reflects that where the need was greatest, the gain was greatest. The non-whites benefited more than the whites from a rising level of living, with the corresponding improvement in medical care, diet, sanitation, and living conditions. The remaining disparity in longevity between the racial groups indicates that there is still a pressing need to improve living conditions for many non-whites.

In the life tables for 1953 and other years, the older non-whites of both sexes have a greater life expectancy than whites at corresponding ages. At age 75 and over, non-white males had a life expectancy of 9.5 years compared to 7.9 years for white males. Non-white females at the same age had a life expectancy of 10.8 years and white females 9.1 years.[18]

The explanation of this is not at all clear. It is possibly a reflection of the selective effect of a higher non-white death rate at the earlier ages. More probably it is the result of a larger error in the reporting of the ages of the non-whites, for it is frequently noted that non-white death rates in the older ages are rather unreliable.[19]

For age groups under 75 years, non-whites have higher death rates than whites. Their excess mortality is especially pronounced at certain ages. In 1954, for instance, non-

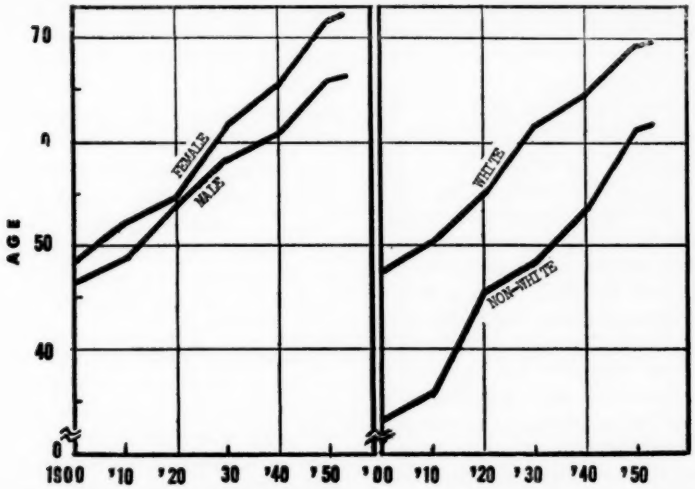

FIGURE 1: ESTIMATED AVERAGE LENGTH OF LIFE IN YEARS: DEATH-REGISTRATION STATES, 1900-1953[20]

Women have consistently enjoyed longer life expectancy than men. In 1920, their advantage was only one year. Today it is six years. The gap would close if the death rate of men equalled that of women.

FIGURE 2: ESTIMATED AVERAGE LENGTH OF LIFE IN YEARS, WHITE AND NON-WHITE POPULATIONS: DEATH-REGISTRATION STATES 1900-1953[21]

The racial differential is growing smaller. Between 1910-20, non-whites gained almost 10 years while whites gained 4.6 years. Between 1940-50, non-whites gained 7.1 and whites gained 5 years.

white excess mortality is greatest at ages 25-34. At these ages the death rate for non-white males is 2.4 times that for white males, and the non-white female death rate is 3.0 times the rate for white females. The non-white rate under one year of age is almost twice that of the whites.[22] This indicates a great need to concentrate efforts to reduce mortality among non-whites at these ages.

COUNTRY PEOPLE HAVE EDGE OVER CITY COUSINS

Traditionally, rural people have had a lower death rate than city people. In recent decades this differential in mortality has declined, although it is believed still to exist. It is not possible to determine the actual difference because the statistics are neither comparable nor entirely accurate. Definitions of rural and urban areas have shifted during the years; and prior to 1939, deaths were reported according to place of occurrence rather than place of residence. Even today there appears to be considerable confusion in determining whether deaths reported from suburban areas should be classified as urban or rural. Unfortunately

the magnitude of errors due to such factors has never been determined.[23]

The existence of this differential is also shown by the longer life expectancy at birth for the rural population. In 1900-1902, the life expectancy for rural white males was 54.0 years compared to 43.9 years for urban white males; it was 54.4 years for rural white females compared to only 47.9 years for urban white females. By 1939, rural white males had an expectancy of 64.1 and females 67.5 years compared to 61.6 and 66.3 years for urban white males and females, respectively.[24]

Specific studies of some areas have shown a differential favoring the urban population when rates are adjusted for age differences. It is not clear just how much of the remaining rural-urban differential is due to errors of data and how much is due to an actual difference in mortality experience. But it does seem likely that the rural-urban differential may in time disappear.

REGIONAL DIFFERENCES EXIST

There are a number of differences in the mortality experience of people in different parts of the United States. Crude death rates in 1950 ranged from 10.5 in the middle Atlantic states to 8.4 in the west south central states.[25] These differences in the crude death rates, however, reflect differences not only in mortality but also in the age, sex and race composition of the populations. When adjusted for age differences, the highest death rates were in the south Atlantic states with a rate of 9.1, and the lowest were in the west north central states with a rate of 7.6. These regions also ranked highest and lowest respectively in 1940.

Between 1940 and 1950, the lowest decrease was in the west north central states; the highest was in the west south central and south Atlantic states. This suggests that in time the regional differential will grow smaller.

Historical differences are not clear cut because recent regional mortality data are not comparable with earlier data. The Registration Area did not contain all the states prior to 1933 so registration was incomplete.

During the 1940's, the average length of life for whites increased substantially in every region of the country.

The greatest increase in life expectancy has been for those living in the mountain states where it had been lowest. The smallest increase was for those living in the west north central states where life ex-

TABLE II: AGE-ADJUSTED DEATH RATES FOR UNITED STATES AND EACH GEOGRAPHIC AREA, 1940 AND 1950[26]

Area	1950	1940	Percent Decrease
United States	8.4	10.7	21.5
Geographic Areas:			
New England	7.9	10.2	22.5
Middle Atlantic	8.8	11.1	20.7
East North Central	8.4	10.4	19.2
West North Central	7.6	9.1	16.5
South Atlantic	9.1	12.0	24.2
East South Central	8.9	11.6	23.3
West South Central	8.1	10.8	25.0
Mountain	8.2	10.7	23.4
Pacific	7.9	10.2	22.5

pectancy had been highest. Thus, the regional differences in longevity narrowed considerably during the 1940's.

SOCIO-ECONOMIC DIFFERENTIALS NOT SO CLEARLY DEFINED

Perhaps the area of greatest need for research in mortality in the United States is that of socio-economic differentials. Many generalizations exist regarding differences in mortality between different income, occupational and educational groups. But too frequently these are little more than common sense generalizations. The one that the lower socio-economic groups have a different mortality experience from the upper socio-economic groups is seldom demonstrated, and the actual differences are even more rarely set forth.

Dr. Harold Dorn of the United States Public Health Service did a study of the rural counties of Ohio in which he classed the counties according to economic status. He found that in general the death rates in the poorer economic areas were about ten percent higher than in more prosperous areas, when adjustment was made for age differences. He reported, as would be expected, that the greatest differential existed in deaths from diseases most readily prevented by application of medicine, hygiene and sanitation.[28]

The most extensive studies published concerning the socio-economic differentials in a United States city are those made of Cincinnati by the Public Health Federation of that city for 1929-31, 1939-41 and 1949-51. In the study for 1929-31, it was found that the lowest economic group of that city had a death rate approximately twice that of the highest economic group, after the rates were adjusted for age differences. For some diseases, especially tuberculosis, pneumonia and enteritis, the differential was even larger.[29]

The study for 1939-41 showed that although the total death rate had declined about ten percent, the death rate for the lower economic group was still much higher than that of the upper group. The dif-

TABLE III: EXPECTATION OF LIFE AT BIRTH BY GEOGRAPHIC AREAS, WHITE POPULATION OF THE UNITED STATES 1939-1941 AND 1949-1951[27]

Area	White Males			White Females		
	1949-1951	1939-1941	Percent Increase	1949-1951	1939-1941	Percent Increase
United States	66.3	62.8	5.6	72.0	67.3	7.0
New England	66.9	63.3	5.7	72.1	67.5	6.8
Middle Atlantic	66.2	62.7	5.6	71.2	66.7	6.7
East North Central	66.5	63.4	4.9	71.9	67.5	6.5
West North Central	67.8	65.2	4.0	73.3	69.2	5.9
South Atlantic	66.0	61.7	7.0	72.5	67.0	8.2
East South Central	66.0	62.0	6.5	71.8	66.3	8.3
West South Central	66.1	62.1	6.4	72.6	66.8	8.7
Mountain	65.4	61.0	7.2	71.9	66.0	8.9
Pacific	66.1	62.5	5.8	72.9	68.5	6.4

ferential was explained largely by a much higher rate of death from infectious diseases. Accidents and homicides were secondary factors. The rates for chronic diseases did not show significant differences between socio-economic groups.[30]

The results for the 1949-51 study were much the same as those of 1939-41, so far as differentials were concerned. The lowest economic area of Cincinnati still showed a significantly higher death rate from infectious diseases, but the chronic disease rates were not very different between the different economic groups.[31]

Dr. L. C. Coombs of the University of Chicago, using data for Chicago, found also that in general deaths from chronic diseases showed very little correlation with economic status. But deaths from infectious and parasitic diseases showed a high inverse correlation.[32]

In a series of life tables for the different economic groups in Chicago, Dr. Albert J. Mayer and Dr. Philip Hauser of the University of Chicago found a consistent inverse relationship between economic status and life expectancy at birth for the years 1920, 1930, 1935 and 1940. In the 20 years, the life expectancy of males in the lowest economic group increased by 6.9 years and females by 8.5 years. In the highest economic group, expectancy increased only 4.8 years for males and 7.4 years for females. This shows a definite tendency for the gap in expectancy between the highest and lowest economic group to become smaller.[33].

All of the studies so far discussed have used indices of socio-economic status based upon such things as income, median rent and similar data. The use of occupation as a socio-economic index offers a number of possibilities, but in the United States, data have not been readily available for studies of occupational mortality. Miss Jessamine Whitney of the National Tuberculosis Association published occupational death rates for a group of ten states. These showed a standardized death rate of 13.10 for unskilled workers between ages 15 and 65 as compared to a rate of 8.70 for all gainfully employed males.[34]

It is to be hoped that improved reporting of occupation on death certificates and the setting up of census tracts in more cities and counties of the United States would provide much better data in the future for the study of occupational and socio-economic differentials. As has been shown, there is reason to believe that the differentials in this area are growing smaller. The greater control of contagious diseases has probably brought a greater proportional decline in mortality in the lower socio-economic groups, where the incidence of these diseases has been greater. But, as in the case of other differentials, important differences still remain and probably will continue for some time to come.

DEATH COMES FROM DIFFERENT CAUSES THAN IN 1900

In the past half century, there have been extensive changes in the leading causes of death in the

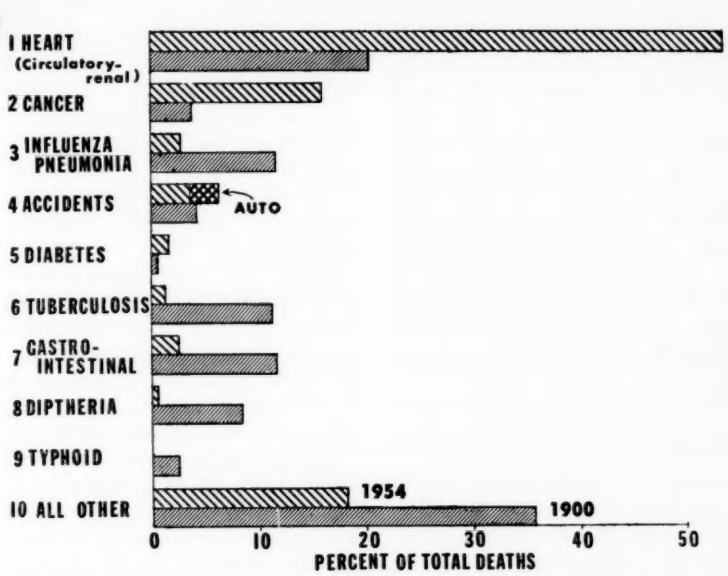

FIGURE 3: PROPORTION OF ALL DEATHS RESULTING FROM SELECTED CAUSES: DEATH-REGISTRATION STATES, AS OF 1900 AND 1954. (Exclusive of fetal deaths.)[35]

The radical shift in the pattern of death since 1900 reflects the aging of the population. Today accidents are the biggest killer among children. Diseases of the circulatory system and cancer are the biggest killers of adults and they cause more than half of all deaths.

United States. In 1900, infectious diseases, influenza and pneumonia, tuberculosis, gastro-intestinal diseases, typhoid fever, diphtheria, and the like caused many deaths. Mortality from these diseases, while still appreciable in some instances, has declined remarkably.

This achievement resulted largely from the sanitary control of the environment; isolation of contagious disease cases; immunization; and the development and application of new therapeutic, medical, and surgical techniques. The social and economic gains made in this period also contributed materially to public health progress and vice versa.[36]

The decline in mortality from the infectious diseases was striking. Equally striking was the rise in the crude death rate from the chronic diseases such as malignant neoplasms (cancer) and the cardiovascular-renal complex (including diseases of the heart, vascular lesions affecting the central nervous system and nephritis). The latter group accounted for more than half the total deaths in 1954.

That the rise in the death rate from chronic diseases is a function of the aging of the population is clearly seen when rates are adjust-

ed for age differences. The age-adjusted death rate for the cardio-vascular-renal diseases was practically no higher in 1950 than 1900.[37] Even after age-adjustment, the death rate from malignant neoplasms was greater in 1950 than in 1900, but much of this reported increase may have been due to better diagnosis and more frequent reporting of the disease.[38] This is not to minimize these two causes of death, for at present they lead all other causes in the United States.

The change in the importance of the various causes of death has resulted in an especially significant lowering of the death rates in the younger age groups. Since infectious diseases took a heavy toll in these age groups in the past, the sharp reduction in the death rate from such diseases is reflected in the current lower death rates of younger people.[39] Now accidents rank first among the causes of death for pre-school and school children and young adults and fourth for the whole population.

CAUSES OF DEATH DIFFER BETWEEN SEXES AND RACES

Many causes of death show a marked difference between the sexes. Male mortality from tuberculosis is about twice that of female. Male mortality is more than twice as high for accidents, 3.7 times as high for suicide and 3.6 times as high for homicide. Female rates are appreciably higher for diabetes mellitus.[40]

The non-white death rate for homicide is more than ten times higher than that of whites, nearly three times that of the whites for tuberculosis, twice as high for influenza and pneumonia and almost twice as high for nephritis. White death rates from suicide are nearly three times as high as non-white, twice as high for poliomyelitis and appreciably higher for a number of other causes.[41]

Quite obviously, research in mortality differentials is badly needed in a number of areas. Why are mortality patterns still quite different in different parts of the country? Is there concrete evidence of socio-economic differentials? Of occupational differences? Improved reporting on death certificates in the future will make possible better and more detailed studies of occupational differentials as well as more accurate investigations of mortality in the older age groups.

LIFE EXPECTANCY COULD BE 75 OR OVER BY 1970

A number of broad conclusions may be drawn from the study of differential mortality. For one thing, there is a very real possibility of increasing longevity among the high mortality groups in the United States population. If all males were to have a death rate comparable to that of females, years would be added to their life expectancy. It is significant that most differentials discussed here have been declining, except for the sex differential.

While it is perfectly clear and understandable that death rates of older persons will not be lowered to the levels of younger age groups, there is still a distinct margin of

gain for the oldsters. Mr. Tavia Gordon of the National Institutes of Health compared United States death rates with those of the Netherlands, England and Wales, and New Zealand. He found that for age groups 1-14 the United States compared favorably. But for each succeeding age group the comparison was less favorable, and for ages 35-64 the United States rates were higher than the other countries.[42]

In a similar comparison of United States death rates with those of sixteen other countries, Dr. Louis I. Dublin, while associated with the Metropolitan Life Insurance Company, found a higher death rate past age 45 for the United States population. This was mainly explained by higher rates in this country for cardiovascular-renal diseases and accidents for men and diabetes for women. Dublin explained the higher death rates for these diseases partly in terms of over-eating and partly to the fact that better medical care allows a larger proportion of persons with physical impairments to live to an older age.[43]

There is continuous improvement in the techniques of treatment of chronic diseases. This, together with education and publicity aimed at early diagnosis and treatment, offers hope that even if chronic disease is not cured it may be controlled more effectively. In fact, the growth of geriatric medicine in recent years has been of great significance. Many new procedures are being developed. Surgery is now used successfully in a great many cases where it was formerly thought impossible because of the age of the patient.[44] Techniques have been developed which allow for early detection and prevention of the crippling complications from chronic diseases.[45] There is a growing hope of not only lowering the death rate in the older ages but making those years more active and enjoyable. All of this should bring a further significant lowering of death rates in the years past 50, insuring more people in the future a better chance to live out their "three score years and ten."

The situation has been summed up by Gordon:

> As the second half of the twentieth century opens, major reductions in mortality rates must come through control of accidents and the chronic diseases. This does not necessarily require another medical revolution similar to that which occurred for the infectious diseases. The experience of other countries demonstrates that a substantially lower mortality for the older ages is possible, even at the present level of medical knowledge.[46]

Success in increasing longevity in the future will in a large part depend upon the reduction of the death rates of older people. As Dorn has observed, the mortality in the early years is already so low that further decreases will have only a small effect upon the average longevity of the total population. Be that as it may, there are estimates that the life expectancy may well increase to 75, and Dorn has estimated that white women will have an expectancy above that by 1970.[47]

WILL WE MEET THE CHALLENGE?

Since 1900, the proportion of people over 65 has doubled in the United States population, growing from 4.1 to 8.5 percent. Those of us who are 45 years old or over today will be 65 or over in 1975. Assuming only the continuation of present mortality, there will be about 20.7 million in this age group in 1975 compared to only slightly over 14.1 million in 1955.[48]

This increase in the proportion of oldsters will be accelerated as the death rates for people over 50 are lowered.

There is no doubt but that this will place a heavier load on the economically productive people in the population. Medical care for the chronically ill, adequate income and educational and recreational activities must somehow be provided for older people.

Quite another type of educational program should be designed to reorient completely present attitudes toward the place of older people in society. National and state governments, communities, social and welfare agencies, citizen, industrial and labor groups and all other such groups should integrate programs toward that end. The many problems which the inevitable aging of our population poses will be met successfully and in time only in this way.

—ROBERT C. COOK, *Editor*

SOURCES

In the preparation of this *Bulletin* the following sources were consulted. The reader is preferred to them for additional information. Specific text references are given below.

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The parade of U. S. Citizens toward an average life expectancy of three score years and fifteen is interrupted to point up what Julian Huxley calls "the gravest problem of our time" . . .

Here are a few $128 questions related to this problem:

How are current population trends changing the face of our nation?

What will happen, as a result of population growth, to our resources (land, minerals and water) in the USA during the years 1975-2000?

Can Latin American countries with soaring birth and death rates hope to improve the living levels of their people?

Do recent population trends in Italy warrant a re-examination of our foreign policy?

Why do population trends in the USSR worry the men in the Kremlin?

How does the population trend of many countries affect people's income—even in the USA?

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